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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

JUN 29 1992

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the matter of

Amendment of Parts 1, 2, and 21 of the
Commission's Rules Governing Use of the
Frequencies in the 2.1 and 2.5 Ghz Bands

PR Docket No. 92-80
RM 7909

ORIGINAL
FILE

COMMENTS

Hardin and Associates, Inc. ("H&A"), pursuant to Section 1.415(a) of the Commission's Rules, hereby submits its initial comments in response to the Notice of Proposed Rule Making ("NPRM") in the captioned proceeding.

1. INTRODUCTION

H&A is an professional engineering consulting firm whose major concentration of their practice is in wireless cable and whose client's include operators, conditional licensees and applicants for all wireless cable services, e.g. MDS, MMDS, ITFS and MDS-H. H&A has prepared engineering portions of applications in over seventy (70) different markets and assist clients in all engineering areas including station design and construction. As such, we have a significant interest in the subject of this proceeding and have relevant experience from which to draw our conclusions.

H&A applauds the efforts of the Commission over the last few years in their efforts to

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ease the regulatory burdens on wireless cable thereby aiding in an increase in their competitive position in the multichannel video service marketplace. With this support in place, we have grave misgivings with the bulk of the proposals made in this most recent NPRM.

2. RELOCATION OF MDS PROCESSING

H&A supports relocation of MDS (all wireless cable services) processing as a general policy. The first step of shifting control of H group channels from the Private Radio Branch (PRB) to the Common Carrier Branch (CCB) was a good one. Now the process should be completed. All the channels which are used for wireless cable, MDS, MMDS, MDS-H and ITFS, should be processed and administered together. To that end, the Commission should draw on the strengths and experience of their staffs in the different bureaus to facilitate a smooth processing flow.

We propose that the original processing of all wireless cable applications, i.e. the entry of the application into the database and the check for gross errors or missing information, be preformed by the Licensing Division of the PRB. As proposed later in these comments, the PRB would also be charged with maintaining a current database of all wireless cable licenses and applications. This is an area where PRB has excelled in the past and an area where the CCB has been remiss.

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We further propose that all further analysis and administration of wireless cable applications and licenses be located in the Mass Media Bureau. It is logical that, since these services are growing closer in their rules and their utilization, one branch should be controlling these services. As most MMDS operators appear to be opting for non-common carrier operation and, for the most part, have not been operating as common carriers for some time, there is no compelling reason for them to remain in the CCB. Further, as wireless cable operators hold themselves out to the public as "cable" operators, they have, for all intents and purposes, become a mass media service and should be regulated as such.

3. STATION SEPARATION VERSES PRESENT INTERFERENCE CRITERIA

H&A strongly opposes the proposals to abolish the present cochannel and adjacent channel interference criteria as the methodology by which mutual exclusivity is determined. The underlying engineering justification for the proposed station separation criteria and its associated limits on height of a wireless cable station's radiation center by Height Above Average Terrain (HAAT) is fundamentally and significantly flawed.

First, the attempt to apply HAAT to this line-of-site service is completely without technical merit. HAAT is a measurement method utilized primarily in the AM, FM and TV frequency bands to allow a simulation of "flat earth". In those services, whose frequencies are 1/50th to 1/100th of the wireless cable frequencies, the propagation characteristics are significantly different. They are not line-of-site services and terrain blockage is not

nearly the significant deterrent to quality signal reception as it is the S band microwave frequencies of wireless cable. Additionally, the Effective Radiated Power (ERP) of most broadcast stations is orders of magnitude higher than wireless cable stations which allow for significant advantages in overcoming obstructions. An example of the problem which determining radiation centers of wireless cable station by HAAT is in order.

Let us assume a wireless cable system is proposed on the edge of a plateau which overlooks a wide and populous valley. The plateau is flat and has a general ground elevation of 2000 FT AMSL. The valley is similarly flat and has a general ground elevation of 1500 FT AMSL. Should the wireless cable applicant propose the position of the transmit site to be at the edge of the plateau overlooking the valley and proposes a 100 FT AGL radiation center at that point, the HAAT of the station would be 350 FT (average terrain of 1750 FT AMSL plus 100 FT AGL). However, the actual height of the station's radiation center is 2100 FT AMSL or 600 FT above the valley floor and the significant portion of the population base. From this point, the radio horizon of the station (assuming 30 FT AGL receive antennas) would be 42.4 mi (68.2 km). Compare this allowed coverage to that of a tower which is 10 mi (16 km) into the valley from the plateau and has a significantly higher 350 FT AGL radiation center and its associated HAAT of 350 FT. The similarly derived radio horizon of that station is only 34.2 mi (55.1 km). This is a coverage reduction of better than 34%, even though the HAAT is the same in either case.

The foregoing example, while extreme, points out the fallacy of using HAAT as a means of simulating "flat earth" for signal coverage and interference questions.

Second, in the analysis for station spacing, no assumption was made as to the receive antenna heights. The height of the receive antenna will significantly increase or decrease the coverage area of a given station. By way of example, with a 30 FT AGL receive antenna, the coverage will increase 7.75 miles over an antenna at ground level. Any analysis of station coverage and interference must include a specified receive antenna height as is presently included in Section 21.902(d)(3) of the Rules.

Third, the assumption is made in footnote 24 of the NPRM that the receiving antennas are omni-directional in nature. This is completely incorrect. The receive antennas used in wireless cable are very directional with half power beamwidths which vary from 51 degrees to less than 6 degrees. As this was an underlying assumption in the analysis, the analysis and its results are fundamentally flawed.

Generally, as this proposal for station separation criteria must utilize the HAAT methodology and HAAT has no real bearing on station coverage in this service, the entire proposal is brought into question. With the addition of the lack of receive antenna heights and receive antenna directivity in the analysis, the proposal is crippled and without significant technical merit.

It is the conclusion of H&A that the only clear and reliable method to predict and avoid

interference in this line-of-site service is the continued implementation of the present cochannel and adjacent channel criteria. One area where aid in implementation of analysis of these interferences by the Commission's staff may be found is in the requirement of inclusion of a radio shadow map of the proposed station which also depicts the Protected Service Areas ("PSA") of any stations which may be affected. Such a study would quickly draw attention to any possible areas of interference or confirm the lack of any such areas. While this would be an additional step in the preparation of the applications, it could significantly reduce the time spent by the staff in analysis of the applications.

4. INCONSISTENCIES IN INTERFERENCE ANALYSIS

As we have stated above, H&A opposes the use of station separation criteria as it is devoid of technical foundation and merit. Additionally, the NPRM is internally inconsistent in that it proposes such separation criteria in one case, but still require the present cochannel and adjacent channel interference criteria be used in the case of collocated stations and as the criteria for analysis of interference with ITFS stations. This dual standard will cause increased confusion, not reduce the confusion.

We urge the Commission to retain the present cochannel and adjacent channel interference criteria for all wireless cable services.

5. PROPOSED PROTECTION FOR ITFS RECEIVE SITES

H&A opposes the proposal which requires ITFS operators would be provided "actual" protection and would be required to report interference from a new station within a defined period of time or lose the interference protection. This procedure invites error and possibly abuse. First, given a complete database of all ITFS stations and their registered receive sites, the analysis for possible interference is straight forward and should be required. Second, the proposed station should, and presently does, have the duty to demonstrate that it will not cause interference prior to grant of a license. To allow a station a grant of a license without such a showing is a gross violation of the public interest and the interests of the previously operating stations.

We urge the Commission to retain the present requirements for demonstration of protection of ITFS receive sites as part of the application process.

6. SETTLEMENT GROUPS

H&A fully supports a ban on all settlement groups. This ban would deter the speculative filing which have filled the inventories and delayed analysis of applicants with sincere interest in constructing and operating systems.

7. WIRELESS CABLE DATABASE

H&A fully supports the creation of a database which contains up-to-date information on

licenses and application in all the services, including ITFS registered receive sites. For this database to be truly effective and useful, it must be an online database that is accessible, on a read only basis, by the general public. Specifically, if such a database was available to the preparers of wireless cable applications, we could prepare more complete and accurate applications, thereby, speeding the processing of applications. We would further propose that a printout of a channel search of the database should be required with each application to allow confirmation to the staff of the basis of the analysis included in the application. This would effectively eliminate any questions as to the accuracy of the information upon which the application was prepared and act as some level of safeguard to the applicant that the preparer is fully cognizant of the possible interference the proposed station may cause.

We support the creation of a complete wireless cable database, urge the Commission to make this database accessible to the general public in an online basis and further urge the Commission to require a printout of this database, within a given distance of the proposed transmit site coordinates, be included in all wireless cable applications.

8. METHODOLOGY OF PROCESSING OF APPLICATIONS

While H&A agrees that a priority scheme should be instituted for processing of the backlog of applications, we do not support with the priorities proposed in the NPRM.

First, we believe that the most pressing applications generally deal with modifications for

existing or proposed (and conditionally licensed) stations. Our reasoning is that these applications represent entities which either are presently operating or will soon be operating stations. As such, these entities are just the entities that the Commission wishes to support and these applications should be given priority.

Second, the next level of priority is more complex and has several disparate pieces. Namely, equal value should be given to 1983 applications and to non mutually exclusive applications. As concerns the 1983 applications, it is true that the existence of these applications is a hinderance to the effective implementation of new systems. They cause interference difficulties as well as, when coupled with the Public Notice of April 19, 1988, eliminate some geographic areas from the available options for filing. This portion of the backlog needs addressing with due dispatch. As concerns non-mutually exclusive applications, these applicants should not be delayed in moving ahead in their areas. It is a sign of their desire to construct that they prepared applications which are non-conflicting.

Third, mutually exclusive applications which are to be incorporated into an operating or soon to be operating system deserve the next level of consideration for many of the same reasons raised above. One of the main hindrances to the development of wireless cable systems has been the delays in grants of the additional channels in the market which would allow the wireless cable operator to be in a more competitive position with the wired cable operations.

Finally, the lowest or last group of applications to be processed should consist of what may be called "singleton" applications for MMDS, ITFS or MDS-H channels. Singleton applications would be defined as applications which are not part of any of the aforementioned groups. Additionally, MDS applications should be included in this group. The reasoning for placing these applications with the lowest priority is simple. These applications have the least effect on the imminent construction of a wireless cable system. Specifically, these are not part of a "system" filing or filings. As for the MDS channels, these channels becoming less desirable for inclusion in a wireless cable system as they require the operator to utilize a dual band block downconverter instead of a single band unit at a cost adder of approximately \$20 per subscriber. This cost is significant and many of our clients have opted not to use the MDS channel or channels for this reason. As such, their value is questionable and they should have a lower priority in the processing, not the highest priority as proposed in the NPRM.

9. SERVICE AREAS DEFINED BY MSA OR RSA BOUNDARIES

H&A strongly opposes the proposal which would defined service areas by MSA or RSA boundaries. From a technical standpoint, this proposal is completely incompatible with the actual operation of the stations in this service. Specifically, the services which generally use MSA or RSA boundaries as definition of their services areas, such as cellular telephone, operate from multiple, low power transmit sites which allow full coverage of the service area while allowing limiting the emissions at the irregular boundaries of such service areas. This operational scheme is not the scheme employed

In wireless cable. In this service, the service area is served from one, higher power station which is generally centrally located in the service area. In most cases, it is impossible to obtain full coverage of an MSA, much less limit emissions across the borders of the MSAs.

Historically, MMDS licenses have been perceived to be associated with MSA boundaries. This was instituted merely as a method to allow processing of the original 1983 applications and was not meant to support a "de facto" MSA service area.

The commission should not adopt any portion of this proposal and should continue with the present cochannel and adjacent channel interference criteria as the method for determining the location of stations.

10. RETURN OF ALL PENDING APPLICATIONS

H&A strongly opposes the return of all pending applications and the establishment of a new window for acceptance of MDS applications. Such an action would be grossly unfair to the present applicants. Further, as history, e.g. 1983, would predict, such an action would only invite a more massive backlog and higher numbers of speculative filings. For an industry that already suffers from an image problem in the financial community, this action would effectively kill the wireless cable industry.

11. ADDITIONAL PROPOSALS TO SPEED APPLICATION PROCESSING

- 11.A. The single greatest aid the Commission could provide to speed the processing of applications and the subsequent construction of stations is to implement its presently existing rules and procedures with zeal. Dismiss applications which are not perfected in the time required, forfeit licenses for non-construction, and dismiss incomplete or faulty applications.

A corollary to this proposal is that H&A strongly urges the Commission to review the ITFS inventory and clear all pending applications or unbuilt stations which continue to be carried on the inventory without any hope of station construction.

- 11.B. H&A proposes that when the Commission conducts a lottery, choose ten applications in order and then process them in the order picked, providing a grant to the first application which is grantable. It is a waste of time and money to have to relottery each time a tentative selectee is dismissed. This process was employed with great success by the PRB for the former OFS channels.

- 11.C. H&A strongly supports the proposal made previously by the Wireless Cable Association ("WCA") to define the PSA of a wireless cable station as a function of the Effective Isotropic Radiated Power ("EIRP") of the station along each azimuth. Such a methodology would serve as a significant benefit in two areas. First, the method proposed by the WCA would allow for a significantly easier and computer

programmable method for performing interference analysis for non omni-directional PSAs. The present formula in Section 21.902(d)(2) is at best incomplete and requires estimates of the distance to the boundary of the PSA along the azimuth of highest antenna gain. The results from implementation of this formula can vary. The WCA proposal is clearly defined and has no such inconsistencies. Second, the actual market area of most wireless cable operations is significantly greater than that defined by the present rules. This is a significant problem when an operator attempts to secure financing to serve a market for which he only has interference protection for less than one half of the projected market area.

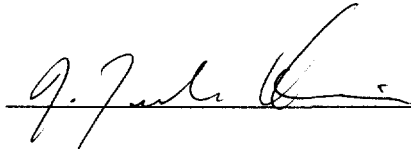
12. CONCLUSION

It is clear from the high level of regulatory activism which wireless cable has enjoyed for the last few years that the Commission firmly supports this industry and its future. Now is the opportunity for the Commission to further enhance and create much needed consistency in the regulations. H&A supports this activity but cautions the Commission not to make change for the sake of change. We believe that rules dealing with cochannel and adjacent channel interference are substantially correct. The need is to now make them consistent across all the services. In the same vein, the same bureau should administer these rules. Finally, we would ask the Commission to make the applicants more accountable for their actions and decrease the delays allowed through inaction by either the applicant in preparing correct applications and lack of timely response to

requests or by the Commission in action on pending applications and their associated petitions.

Respectfully submitted this 29th day of June, 1992.




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